



SEQUENCE LISTING

<110> Grogan, Case C.
Hevey, Michael C.
Schmaljohn, Alan, L.

<120> Chimeric Filovirus Glycoprotein

<130> 003/243/SAP

<140> 10/066,506

<141> 2002-01-31

<150> 60/267,522

<151> 2001-01-31

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<170> Apple Macintosh Microsoft Word 6.0

<210> 1

<211> 2252

<212> DNA

<213> Artificial Sequence

<220>

<223> chimeric molecule between Ebola virus Zaire Mayinga strain Glycoprotein 1 and Marburg virus strain Musoke Glycoprotein 2

<400> 1

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<210> 2

<211> 747

<212> PRT

<213> Artificial Sequence

<220>

<223> chimeric molecule between Ebola virus Zaire Mayinga strain Glycoprotein 1 and Marburg virus strain Musoke Glycoprotein 2

<400> 2

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Phe Ser Ile Pro Leu Gly Val Ile His Asn
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Ser Thr Leu Gln Val Ser Asp Val Asp Lys
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Leu Val Cys Arg Asp Lys Leu Ser Ser Thr
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Asn Gln Leu Arg Ser Val Gly Leu Asn Leu
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Tyr Arg Gly Thr	Thr Phe Ala Glu Gly Val		
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Val Ala Phe Leu	Ile Leu Pro Gln Ala Lys		
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Tyr Val Gln Leu	Glu Ser Arg Phe Thr Pro		
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Gln Phe Leu Leu	Gln Leu Asn Glu Thr Ile		
	255		260
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	265		270
Gly Lys Leu Ile	Trp Lys Val Asn Pro Glu		
	275		280
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Thr	Ala	Val	Leu	Ile	Lys	Asn	Gln	Asn	Asn
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<212> DNA

<213> Artificial Sequence

<220>

<223> chimeric molecule between Marburg virus strain Musoke
 Glycoprotein 1 and Ebola virus Zaire Mayinga strain
 Glycoprotein 2

<400> 3

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<210> 4

<211> 610

<212> PRT

<213> Artificial Sequence

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<223> chimeric molecule between Marburg virus strain Musoke
Glycoprotein 1 and Ebola virus Zaire Mayinga strain
Glycoprotein 2

<400> 4

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Gln Asn Val Asp Ser Val Cys Ser Gly Thr
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Leu Gln Lys Thr Glu Asp Val His Leu Met
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Gly Phe Thr Leu Ser Gly Gln Lys Val Ala
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Asp Ser Pro Leu Glu Ala Ser Lys Arg Trp
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Thr	Glu	Leu	Arg	Thr	Phe	Ser	Ile	Leu	Asn	
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<211> 2046

<212> DNA

<213> Artificial Sequence

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<223> chimeric molecule between Marburg virus strain Musoke Glycoprotein 1 and Marburg virus strain Raven Glycoprotein 2

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<211> 681

<212> PRT

<213> Artificial Sequence

<220>

<223> chimeric molecule between Marburg virus strain Musoke Glycoprotein 1 and Marburg virus strain Raven Glycoprotein 2

<400> 6

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Met Lys Thr Thr Cys Phe Leu Ile Ser Leu
 1             5             10
Ile Leu Ile Gln Gly Thr Lys Asn Leu Pro
             15             20
Ile Leu Glu Ile Ala Ser Asn Asn Gln Pro

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				25					30
Gln	Asn	Val	Asp	Ser	Val	Cys	Ser	Gly	Thr
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Leu	Gln	Lys	Thr	Glu	Asp	Val	His	Leu	Met
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Gly	Phe	Thr	Leu	Ser	Gly	Gln	Lys	Val	Ala
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Asp	Ser	Pro	Leu	Glu	Ala	Ser	Lys	Arg	Trp
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Ala	Phe	Arg	Thr	Gly	Val	Pro	Pro	Lys	Asn
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Val	Glu	Tyr	Thr	Glu	Gly	Glu	Glu	Ala	Lys
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Thr	Cys	Tyr	Asn	Ile	Ser	Val	Thr	Asp	Pro
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Ser	Gly	Lys	Ser	Leu	Leu	Leu	Asp	Pro	Pro
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Thr	Asn	Ile	Arg	Asp	Tyr	Pro	Lys	Cys	Lys
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Thr	Ile	His	His	Ile	Gln	Gly	Gln	Asn	Pro
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His	Ala	Gln	Gly	Ile	Ala	Leu	His	Leu	Trp
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Gly	Ala	Phe	Phe	Leu	Tyr	Asp	Arg	Ile	Ala
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Ser	Thr	Thr	Met	Tyr	Arg	Gly	Lys	Val	Phe
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Thr	Glu	Gly	Asn	Ile	Ala	Ala	Met	Ile	Val
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Asn	Lys	Thr	Val	His	Lys	Met	Ile	Phe	Ser
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Arg	Gln	Gly	Gln	Gly	Tyr	Arg	His	Met	Asn
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Leu	Thr	Ser	Thr	Asn	Lys	Tyr	Trp	Thr	Ser
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Ser	Asn	Gly	Thr	Gln	Thr	Asn	Asp	Thr	Gly
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Cys	Phe	Gly	Ala	Leu	Gln	Glu	Tyr	Asn	Ser
				215					220
Thr	Lys	Asn	Gln	Thr	Cys	Ala	Pro	Ser	Lys
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Ile	Pro	Pro	Pro	Leu	Pro	Thr	Ala	Arg	Pro
				235					240
Glu	Ile	Lys	Leu	Thr	Ser	Thr	Pro	Thr	Asp
				245					250
Ala	Thr	Lys	Leu	Asn	Thr	Thr	Asp	Pro	Ser
				255					260
Ser	Asp	Asp	Glu	Asp	Leu	Ala	Thr	Ser	Gly
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Ser	Gly	Ser	Gly	Glu	Arg	Glu	Pro	His	Thr
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Thr	Ser	Asp	Ala	Val	Thr	Lys	Gln	Gly	Leu
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Ser	Ser	Thr	Met	Pro	Pro	Thr	Pro	Ser	Pro

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Gln	Pro	Ser	Thr	Pro	Gln	Gln	Gly	Gly	Asn
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Asn	Thr	Asn	His	Ser	Gln	Asp	Ala	Val	Thr
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Glu	Leu	Asp	Lys	Asn	Asn	Thr	Thr	Ala	Gln
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Pro	Ser	Met	Pro	Pro	His	Asn	Thr	Thr	Thr
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Ile	Ser	Thr	Asn	Asn	Thr	Ser	Lys	His	Asn
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Phe	Ser	Thr	Leu	Ser	Ala	Pro	Leu	Gln	Asn
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Thr	Thr	Asn	Asp	Asn	Thr	Gln	Ser	Thr	Ile
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Thr	Glu	Asn	Glu	Gln	Thr	Ser	Ala	Pro	Ser
				375					380
Ile	Thr	Thr	Leu	Pro	Pro	Thr	Gly	Asn	Pro
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Thr	Thr	Ala	Lys	Ser	Thr	Ser	Ser	Lys	Lys
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Gly	Pro	Ala	Thr	Thr	Ala	Pro	Asn	Thr	Thr
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Asn	Glu	His	Phe	Thr	Ser	Pro	Pro	Pro	Thr
				415					420
Pro	Ser	Ser	Thr	Ala	Gln	His	Leu	Val	Tyr
				425					430
Phe	Arg	Arg	Lys	Arg	Ser	Ile	Phe	Trp	Lys
				435					440
Glu	Gly	Asp	Ile	Phe	Pro	Phe	Leu	Asp	Gly
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Leu	Ile	Asn	Thr	Glu	Ile	Asp	Phe	Asp	Pro
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Ile	Pro	Asn	Thr	Glu	Thr	Ile	Phe	Asp	Glu
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Ser	Pro	Ser	Phe	Asn	Thr	Ser	Thr	Asn	Glu
				475					480
Glu	Gln	His	Thr	Pro	Pro	Asn	Ile	Ser	Leu
				485					490
Thr	Phe	Ser	Tyr	Phe	Pro	Asp	Lys	Asn	Gly
				495					500
Asp	Thr	Ala	Tyr	Ser	Gly	Glu	Asn	Glu	Asn
				505					510
Asp	Cys	Asp	Ala	Glu	Leu	Arg	Ile	Trp	Ser
				515					520
Val	Gln	Glu	Asp	Asp	Leu	Ala	Ala	Gly	Leu
				525					530
Ser	Trp	Ile	Pro	Phe	Phe	Gly	Pro	Gly	Ile
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Glu	Gly	Leu	Tyr	Thr	Ala	Gly	Leu	Ile	Lys
				545					550
Asn	Gln	Asn	Asn	Leu	Val	Cys	Arg	Leu	Arg
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Arg	Leu	Ala	Asn	Gln	Thr	Ala	Lys	Ser	Leu

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Glu	Leu	Leu	Leu	Arg	Val	Thr	Thr	Glu	Glu
				575					580
Arg	Thr	Phe	Ser	Leu	Ile	Asn	Arg	His	Ala
				585					590
Ile	Asp	Phe	Leu	Leu	Thr	Arg	Trp	Gly	Gly
				595					600
Thr	Cys	Lys	Val	Leu	Gly	Pro	Asp	Cys	Cys
				605					610
Ile	Gly	Ile	Glu	Asp	Leu	Ser	Lys	Asn	Ile
				615					620
Ser	Glu	Gln	Ile	Asp	Lys	Ile	Arg	Lys	Asp
				625					630
Glu	Gln	Lys	Glu	Glu	Thr	Gly	Trp	Gly	Leu
				635					640
Gly	Gly	Lys	Trp	Trp	Thr	Ser	Asp	Trp	Gly
				645					650
Val	Leu	Thr	Asn	Leu	Gly	Ile	Leu	Leu	Leu
				655					660
Leu	Ser	Ile	Ala	Val	Leu	Ile	Ala	Leu	Ser
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Cys	Ile	Cys	Arg	Ile	Phe	Thr	Lys	Tyr	Ile
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<210> 7

<211> 2046

<212> DNA

<213> Artificial Sequence

<220>

<223> chimeric molecule between Marburg virus strain Raven
Glycoprotein 1 and Marburg virus strain Musoke Glycoprotein 2

<400> 7

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ggatttacac	tgagt	gggca	aaaagttgct	gattccccct	tggaagcatc	200		
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ggattgccct	ccatt	tgttg	ggggcatttt	tcttgatga	tcgcgttgcc	450		
tctacaacaa	tgtac	cgagg	caaggtcttc	actgaaggaa	atatagcagc	500		
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catccaagca	cctca	caaca	tgagcaaaac	agtacgaatc	cttcccgaca	950		
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tagatccaac agaaaatccc accacaggac aagacaccaa cagcacaacc 1200
aacatcatca tgacgacatc agatataaca agcaaacacc ccacaaattc 1250
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<210> 8

<211> 681

<212> PRT

<213> Artificial Sequence

<220>

<223> chimeric molecule between Marburg virus strain Raven
Glycoprotein 1 and Marburg virus strain Musoke Glycoprotein 2

<400> 8

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              15              20
Val Leu Glu Ile Ala Ser Asn Ser Gln Pro
              25              30
Gln Asp Val Asp Ser Val Cys Ser Gly Thr
              35              40
Leu Gln Lys Thr Glu Asp Val His Leu Met
              45              50
Gly Phe Thr Leu Ser Gly Gln Lys Val Ala
              55              60
Asp Ser Pro Leu Glu Ala Ser Lys Arg Trp
              65              70
Ala Phe Arg Thr Gly Val Pro Pro Lys Asn
              75              80
Val Glu Tyr Thr Glu Gly Glu Glu Ala Lys
              85              90
Thr Cys Tyr Asn Ile Ser Val Thr Asp Pro
              95             100
Ser Gly Lys Ser Leu Leu Leu Asp Pro Pro
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His	Ala	Gln	Gly	Ile	Ala	Leu	His	Leu	Trp	
				135					140	
Gly	Ala	Phe	Phe	Leu	Tyr	Asp	Arg	Val	Ala	
				145					150	
Ser	Thr	Thr	Met	Tyr	Arg	Gly	Lys	Val	Phe	
				155					160	
Thr	Glu	Gly	Asn	Ile	Ala	Ala	Met	Ile	Val	
				165					170	
Asn	Lys	Thr	Val	His	Arg	Met	Ile	Phe	Ser	
				175					180	
Arg	Gln	Gly	Gln	Gly	Tyr	Arg	His	Met	Asn	
				185					190	
Leu	Thr	Ser	Thr	Asn	Lys	Tyr	Trp	Thr	Ser	
				195					200	
Ser	Asn	Glu	Thr	Gln	Arg	Asn	Asp	Thr	Gly	
				205					210	
Cys	Phe	Gly	Ile	Leu	Gln	Glu	Tyr	Asn	Ser	
				215					220	
Thr	Asn	Asn	Gln	Thr	Cys	Pro	Pro	Ser	Leu	
				225					230	
Lys	Pro	Pro	Ser	Leu	Pro	Thr	Val	Thr	Pro	
				235					240	
Ser	Ile	His	Ser	Thr	Asn	Thr	Gln	Ile	Asn	
				245					250	
Thr	Ala	Lys	Ser	Gly	Thr	Met	Asn	Pro	Ser	
				255					260	
Ser	Asp	Asp	Glu	Asp	Leu	Met	Ile	Ser	Gly	
				265					270	
Ser	Gly	Ser	Gly	Glu	Gln	Gly	Pro	His	Thr	
				275					280	
Thr	Leu	Asn	Val	Val	Thr	Glu	Gln	Lys	Gln	
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His	Pro	Ser	Thr	Ser	Gln	His	Glu	Gln	Asn	
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Ser	Thr	Asn	Pro	Ser	Arg	His	Ala	Val	Thr	
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Glu	His	Asn	Gly	Thr	Asp	Pro	Thr	Thr	Gln	
				325					330	
Pro	Ala	Thr	Leu	Leu	Asn	Asn	Thr	Asn	Thr	
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Thr	Pro	Thr	Tyr	Asn	Thr	Leu	Lys	Tyr	Asn	
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Leu	Ser	Thr	Pro	Ser	Pro	Pro	Thr	Arg	Asn	
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Ile	Thr	Asn	Asn	Asp	Thr	Gln	Arg	Glu	Leu	
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Ala	Glu	Ser	Glu	Gln	Thr	Asn	Ala	Gln	Leu	
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Asn	Thr	Thr	Leu	Asp	Pro	Thr	Glu	Asn	Pro	
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Thr	Thr	Gly	Gln	Asp	Thr	Asn	Ser	Thr	Thr	
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Ser	Lys	His	Pro	Thr	Asn	Ser	Ser	Pro	Asp	
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Ser	Ser	Pro	Thr	Thr	Arg	Pro	Pro	Ile	Tyr	
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Phe	Arg	Lys	Lys	Arg	Ser	Ile	Leu	Trp	Arg	
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Glu	Gly	Asp	Met	Phe	Pro	Phe	Leu	Asp	Gly	
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Leu	Ile	Asn	Ala	Pro	Ile	Asp	Phe	Asp	Pro	
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Val	Pro	Asn	Thr	Lys	Thr	Ile	Phe	Asp	Glu	
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Ser	Ser	Ser	Ser	Gly	Ala	Ser	Ala	Glu	Glu	
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Asp	Gln	His	Ala	Ser	Pro	Asn	Ile	Ser	Leu	
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Thr	Leu	Ser	Tyr	Phe	Pro	Asn	Ile	Asn	Glu	
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Asp	Cys	Asp	Ala	Glu	Leu	Arg	Ile	Trp	Ser	
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Val	Gln	Glu	Asp	Asp	Leu	Ala	Ala	Gly	Leu	
				525					530	
Ser	Trp	Ile	Pro	Phe	Phe	Gly	Pro	Gly	Ile	
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Glu	Gly	Leu	Tyr	Thr	Ala	Val	Leu	Ile	Lys	
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Asn	Gln	Asn	Asn	Leu	Val	Cys	Arg	Leu	Arg	
				555					560	
Arg	Leu	Ala	Asn	Gln	Thr	Ala	Lys	Ser	Leu	
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Glu	Leu	Leu	Leu	Arg	Val	Thr	Thr	Glu	Glu	
				575					580	
Arg	Thr	Phe	Ser	Leu	Ile	Asn	Arg	His	Ala	
				585					590	
Ile	Asp	Phe	Leu	Leu	Thr	Arg	Trp	Gly	Gly	
				595					600	
Thr	Cys	Lys	Val	Leu	Gly	Pro	Asp	Cys	Cys	
				605					610	
Ile	Gly	Ile	Glu	Asp	Leu	Ser	Lys	Asn	Ile	
				615					620	
Ser	Glu	Gln	Ile	Asp	Gln	Ile	Lys	Lys	Asp	
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Glu	Gln	Lys	Glu	Gly	Thr	Gly	Trp	Gly	Leu	
				635					640	
Gly	Gly	Lys	Trp	Trp	Thr	Ser	Asp	Trp	Gly	
				645					650	

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<210> 9

<211> 2051

<212> DNA

<213> Marburg virus strain Musoke

<220>

<223> chimeric molecule between Marburg virus Glycoprotein 1
 and Marburg virus Glycoprotein 2

<400> 9

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<210> 10
<211> 681
<212> PRT
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<220>
<223> chimeric molecule between Marburg virus Glycoprotein 1
and Marburg virus Glycoprotein 2
<400> 10

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      15          20
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Leu Gln Lys Thr Glu Asp Val His Leu Met
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Val Glu Tyr Thr Glu Gly Glu Glu Ala Lys
      85          90
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      95         100
Ser Gly Lys Ser Leu Leu Leu Asp Pro Pro
     105         110
Thr Asn Ile Arg Asp Tyr Pro Lys Cys Lys
     115         120
Thr Ile His His Ile Gln Gly Gln Asn Pro
     125         130
His Ala Gln Gly Ile Ala Leu His Leu Trp
     135         140
Gly Ala Phe Phe Leu Tyr Asp Arg Ile Ala
     145         150
Ser Thr Thr Met Tyr Arg Gly Lys Val Phe
     155         160
Thr Glu Gly Asn Ile Ala Ala Met Ile Val
     165         170
Asn Lys Thr Val His Lys Met Ile Phe Ser
     175         180
Arg Gln Gly Gln Gly Tyr Arg His Met Asn
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Leu Thr Ser Thr Asn Lys Tyr Trp Thr Ser

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Ser Asn Gly Thr	Gln Thr Asn Asp Thr	Gly	
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	215		220
Thr Lys Asn Gln	Thr Cys Ala Pro Ser	Lys	
	225		230
Ile Pro Pro Pro	Leu Pro Thr Ala Arg	Pro	
	235		240
Glu Ile Lys Leu	Thr Ser Thr Pro Thr	Asp	
	245		250
Ala Thr Lys Leu	Asn Thr Thr Asp Pro	Ser	
	255		260
Ser Asp Asp Glu	Asp Leu Ala Thr Ser	Gly	
	265		270
Ser Gly Ser Gly	Glu Arg Glu Pro His	Thr	
	275		280
Thr Ser Asp Ala	Val Thr Lys Gln Gly	Leu	
	285		290
Ser Ser Thr Met	Pro Pro Thr Pro Ser	Pro	
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Gln Pro Ser Thr	Pro Gln Gln Gly Gly	Asn	
	305		310
Asn Thr Asn His	Ser Gln Asp Ala Val	Thr	
	315		320
Glu Leu Asp Lys	Asn Asn Thr Thr Ala	Gln	
	325		330
Pro Ser Met Pro	Pro His Asn Thr Thr	Thr	
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Ile Ser Thr Asn	Asn Thr Ser Lys His	Asn	
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Phe Ser Thr Leu	Ser Ala Pro Leu Gln	Asn	
	355		360
Thr Thr Asn Asp	Asn Thr Gln Ser Thr	Ile	
	365		370
Thr Glu Asn Glu	Gln Thr Ser Ala Pro	Ser	
	375		380
Ile Thr Thr Leu	Pro Pro Thr Gly Asn	Pro	
	385		390
Thr Thr Ala Lys	Ser Thr Ser Ser Lys	Lys	
	395		400
Gly Pro Ala Thr	Thr Ala Pro Asn Thr	Thr	
	405		410
Asn Glu His Phe	Thr Ser Pro Pro Pro	Thr	
	415		420
Pro Ser Ser Thr	Ala Gln His Leu Val	Tyr	
	425		430
Phe Arg Arg Lys	Arg Ser Ile Leu Trp	Arg	
	435		440
Glu Gly Asp Met	Phe Pro Phe Leu Asp	Gly	
	445		450
Leu Ile Asn Ala	Pro Ile Asp Phe Asp	Pro	
	455		460
Val Pro Asn Thr	Lys Thr Ile Phe Asp	Glu	

	465		470
Ser Ser Ser Ser	Gly Ala Ser Ala Glu Glu		
	475		480
Asp Gln His Ala	Ser Pro Asn Ile Ser Leu		
	485		490
Thr Leu Ser Tyr	Phe Pro Asn Ile Asn Glu		
	495		500
Asn Thr Ala Tyr	Ser Gly Glu Asn Glu Asn		
	505		510
Asp Cys Asp Ala	Glu Leu Arg Ile Trp Ser		
	515		520
Val Gln Glu Asp	Asp Leu Ala Ala Gly Leu		
	525		530
Ser Trp Ile Pro	Phe Phe Gly Pro Gly Ile		
	535		540
Glu Gly Leu Tyr	Thr Ala Val Leu Ile Lys		
	545		550
Asn Gln Asn Asn	Leu Val Cys Arg Leu Arg		
	555		560
Arg Leu Ala Asn	Gln Thr Ala Lys Ser Leu		
	565		570
Glu Leu Leu Leu	Arg Val Thr Thr Glu Glu		
	575		580
Arg Thr Phe Ser	Leu Ile Asn Arg His Ala		
	585		590
Ile Asp Phe Leu	Leu Thr Arg Trp Gly Gly		
	595		600
Thr Cys Lys Val	Leu Gly Pro Asp Cys Cys		
	605		610
Ile Gly Ile Glu	Asp Leu Ser Lys Asn Ile		
	615		620
Ser Glu Gln Ile	Asp Gln Ile Lys Lys Asp		
	625		630
Glu Gln Lys Glu	Gly Thr Gly Trp Gly Leu		
	635		640
Gly Gly Lys Trp	Trp Thr Ser Asp Trp Gly		
	645		650
Val Leu Thr Asn	Leu Gly Ile Leu Leu Leu		
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Leu Ser Ile Ala	Val Leu Ile Ala Leu Ser		
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Cys Ile Cys Arg	Ile Phe Thr Lys Tyr Ile		
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Gly

<210> 11

<211> 2039

<212> DNA

<213> Ebola virus Zaire strain

<220>

<223> chimeric molecule between Ebola virus Glycoprotein 1 and Ebola virus Glycoprotein 2

<400> 11

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<210> 12

<211> 676

<212> PRT

<213> Ebola virus Zaire strain

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<223> chimeric molecule between Ebola virus Glycoprotein 1
and Ebola virus Glycoprotein 2

<400> 12

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Leu	Val	Cys	Arg	Asp	Lys	Leu	Ser	Ser	Thr
				55					60
Asn	Gln	Leu	Arg	Ser	Val	Gly	Leu	Asn	Leu
				65					70
Glu	Gly	Asn	Gly	Val	Ala	Thr	Asp	Val	Pro
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Ser	Ala	Thr	Lys	Arg	Trp	Gly	Phe	Arg	Ser
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Gly	Val	Pro	Pro	Lys	Val	Val	Asn	Tyr	Glu
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Ala	Gly	Glu	Trp	Ala	Glu	Asn	Cys	Tyr	Asn
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Leu	Glu	Ile	Lys	Lys	Pro	Asp	Gly	Ser	Glu
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Cys	Leu	Pro	Ala	Ala	Pro	Asp	Gly	Ile	Arg
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Gly	Phe	Pro	Arg	Cys	Arg	Tyr	Val	His	Lys
				135					140
Val	Ser	Gly	Thr	Gly	Pro	Cys	Ala	Gly	Asp
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Phe	Ala	Phe	His	Lys	Glu	Gly	Ala	Phe	Phe
				155					160
Leu	Tyr	Asp	Arg	Leu	Ala	Ser	Thr	Val	Ile
				165					170
Tyr	Arg	Gly	Thr	Thr	Phe	Ala	Glu	Gly	Val
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Val	Ala	Phe	Leu	Ile	Leu	Pro	Gln	Ala	Lys
				185					190
Lys	Asp	Phe	Phe	Ser	Ser	His	Pro	Leu	Arg
				195					200
Glu	Pro	Val	Asn	Ala	Thr	Glu	Asp	Pro	Ser
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Ser	Gly	Tyr	Tyr	Ser	Thr	Thr	Ile	Arg	Tyr
				215					220
Gln	Ala	Thr	Gly	Phe	Gly	Thr	Asn	Glu	Thr
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Glu	Tyr	Leu	Phe	Glu	Val	Asp	Asn	Leu	Thr
				235					240
Tyr	Val	Gln	Leu	Glu	Ser	Arg	Phe	Thr	Pro
				245					250
Gln	Phe	Leu	Leu	Gln	Leu	Asn	Glu	Thr	Ile
				255					260
Tyr	Thr	Ser	Gly	Lys	Arg	Ser	Asn	Thr	Thr
				265					270
Gly	Lys	Leu	Ile	Trp	Lys	Val	Asn	Pro	Glu
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Ile	Asp	Thr	Thr	Ile	Gly	Glu	Trp	Ala	Phe

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Trp	Glu	Thr	Lys	Lys	Asn	Leu	Thr	Arg	Lys	
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Ile	Arg	Ser	Glu	Glu	Leu	Ser	Phe	Thr	Val	
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Val	Ser	Asn	Gly	Ala	Lys	Asn	Ile	Ser	Gly	
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Gln	Ser	Pro	Ala	Arg	Thr	Ser	Ser	Asp	Pro	
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Gly	Thr	Asn	Thr	Thr	Thr	Glu	Asp	His	Lys	
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Ile	Met	Ala	Ser	Glu	Asn	Ser	Ser	Ala	Met	
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Val	Gln	Val	His	Ser	Gln	Gly	Arg	Glu	Ala	
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Ala	Val	Ser	His	Leu	Thr	Thr	Leu	Ala	Thr	
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Ile	Ser	Thr	Ser	Pro	Gln	Ser	Leu	Thr	Thr	
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Lys	Pro	Gly	Pro	Asp	Asn	Ser	Thr	His	Asn	
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Thr	Pro	Val	Tyr	Lys	Leu	Asp	Ile	Ser	Glu	
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Ala	Thr	Gln	Val	Glu	Gln	His	His	Arg	Arg	
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Lys	Ala	Glu	Asn	Thr	Asn	Thr	Ser	Lys	Ser	
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Thr	Asp	Phe	Leu	Asp	Pro	Ala	Thr	Thr	Thr	
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Leu	Ile	Thr	Asn	Thr	Ile	Ala	Gly	Val	Ala	
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Arg	Ser	Ala	Ile	Val	Asn	Ala	Gln	Pro	Lys	
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Cys	Asn	Pro	Asn	Leu	His	Tyr	Trp	Thr	Thr	
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Gln	Asp	Glu	Gly	Ala	Ala	Ile	Gly	Leu	Ala	
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Trp	Ile	Pro	Tyr	Phe	Gly	Pro	Ala	Ala	Glu	
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Gly	Ile	Tyr	Ile	Glu	Gly	Leu	Met	His	Asn	
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Gln	Asp	Gly	Leu	Ile	Cys	Gly	Leu	Arg	Gln	

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Thr Phe Ser Ile Leu Asn Arg Lys Ala Ile			
	585		590
Asp Phe Leu Leu Gln Arg Trp Gly Gly Thr			
	595		600
Cys His Ile Leu Gly Pro Asp Cys Cys Ile			
	605		610
Glu Pro His Asp Trp Thr Lys Asn Ile Thr			
	615		620
Asp Lys Ile Asp Gln Ile Ile His Asp Phe			
	625		630
Val Asp Lys Thr Leu Pro Asp Gln Gly Asp			
	635		640
Asn Asp Asn Trp Trp Thr Gly Trp Arg Gln			
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Trp Ile Pro Ala Gly Ile Gly Val Thr Gly			
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Val Ile Ile Ala Val Ile Ala Leu Phe Cys			
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Ile Cys Lys Phe Val Phe			
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<210> 13

<211> 2046

<212> DNA

<213> Marburg virus strain Raven

<220>

<223> chimeric molecule between Marburg virus Glycoprotein 1 and Marburg virus Glycoprotein 2

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<210> 14

<211> 681

<212> PRT

<213> Marburg virus strain Raven

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and Marburg virus Glycoprotein 2

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Gln Asp Val Asp Ser Val Cys Ser Gly Thr
                    35                    40
Leu Gln Lys Thr Glu Asp Val His Leu Met
                    45                    50
Gly Phe Thr Leu Ser Gly Gln Lys Val Ala
                    55                    60
Asp Ser Pro Leu Glu Ala Ser Lys Arg Trp
                    65                    70
Ala Phe Arg Thr Gly Val Pro Pro Lys Asn
                    75                    80
Val Glu Tyr Thr Glu Gly Glu Glu Ala Lys
                    85                    90
Thr Cys Tyr Asn Ile Ser Val Thr Asp Pro
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Ser Gly Lys Ser Leu Leu Leu Asp Pro Pro
                   105                   110

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His	Ala	Gln	Gly	Ile	Ala	Leu	His	Leu	Trp	
				135					140	
Gly	Ala	Phe	Phe	Leu	Tyr	Asp	Arg	Val	Ala	
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Ser	Thr	Thr	Met	Tyr	Arg	Gly	Lys	Val	Phe	
				155					160	
Thr	Glu	Gly	Asn	Ile	Ala	Ala	Met	Ile	Val	
				165					170	
Asn	Lys	Thr	Val	His	Arg	Met	Ile	Phe	Ser	
				175					180	
Arg	Gln	Gly	Gln	Gly	Tyr	Arg	His	Met	Asn	
				185					190	
Leu	Thr	Ser	Thr	Asn	Lys	Tyr	Trp	Thr	Ser	
				195					200	
Ser	Asn	Glu	Thr	Gln	Arg	Asn	Asp	Thr	Gly	
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Cys	Phe	Gly	Ile	Leu	Gln	Glu	Tyr	Asn	Ser	
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Thr	Asn	Asn	Gln	Thr	Cys	Pro	Pro	Ser	Leu	
				225					230	
Lys	Pro	Pro	Ser	Leu	Pro	Thr	Val	Thr	Pro	
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Ser	Ile	His	Ser	Thr	Asn	Thr	Gln	Ile	Asn	
				245					250	
Thr	Ala	Lys	Ser	Gly	Thr	Met	Asn	Pro	Ser	
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Ser	Asp	Asp	Glu	Asp	Leu	Met	Ile	Ser	Gly	
				265					270	
Ser	Gly	Ser	Gly	Glu	Gln	Gly	Pro	His	Thr	
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Thr	Leu	Asn	Val	Val	Thr	Glu	Gln	Lys	Gln	
				285					290	
Ser	Ser	Thr	Ile	Leu	Ser	Thr	Pro	Ser	Leu	
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His	Pro	Ser	Thr	Ser	Gln	His	Glu	Gln	Asn	
				305					310	
Ser	Thr	Asn	Pro	Ser	Arg	His	Ala	Val	Thr	
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Glu	His	Asn	Gly	Thr	Asp	Pro	Thr	Thr	Gln	
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Pro	Ala	Thr	Leu	Leu	Asn	Asn	Thr	Asn	Thr	
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Thr	Pro	Thr	Tyr	Asn	Thr	Leu	Lys	Tyr	Asn	
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Leu	Ser	Thr	Pro	Ser	Pro	Pro	Thr	Arg	Asn	
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Ile	Thr	Asn	Asn	Asp	Thr	Gln	Arg	Glu	Leu	
				365					370	
Ala	Glu	Ser	Glu	Gln	Thr	Asn	Ala	Gln	Leu	
				375					380	

Asn	Thr	Thr	Leu	Asp	Pro	Thr	Glu	Asn	Pro	385	390
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Asn	Ile	Ile	Met	Thr	Thr	Ser	Asp	Ile	Thr	405	410
Ser	Lys	His	Pro	Thr	Asn	Ser	Ser	Pro	Asp	415	420
Ser	Ser	Pro	Thr	Thr	Arg	Pro	Pro	Ile	Tyr	425	430
Phe	Arg	Lys	Lys	Arg	Ser	Ile	Phe	Trp	Lys	435	440
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Ile	Pro	Asn	Thr	Glu	Thr	Ile	Phe	Asp	Glu	465	470
Ser	Pro	Ser	Phe	Asn	Thr	Ser	Thr	Asn	Glu	475	480
Glu	Gln	His	Thr	Pro	Pro	Asn	Ile	Ser	Leu	485	490
Thr	Phe	Ser	Tyr	Phe	Pro	Asp	Lys	Asn	Gly	495	500
Asp	Thr	Ala	Tyr	Ser	Gly	Glu	Asn	Glu	Asn	505	510
Asp	Cys	Asp	Ala	Glu	Leu	Arg	Ile	Trp	Ser	515	520
Val	Gln	Glu	Asp	Asp	Leu	Ala	Ala	Gly	Leu	525	530
Ser	Trp	Ile	Pro	Phe	Phe	Gly	Pro	Gly	Ile	535	540
Glu	Gly	Leu	Tyr	Thr	Ala	Gly	Leu	Ile	Lys	545	550
Asn	Gln	Asn	Asn	Leu	Val	Cys	Arg	Leu	Arg	555	560
Arg	Leu	Ala	Asn	Gln	Thr	Ala	Lys	Ser	Leu	565	570
Glu	Leu	Leu	Leu	Arg	Val	Thr	Thr	Glu	Glu	575	580
Arg	Thr	Phe	Ser	Leu	Ile	Asn	Arg	His	Ala	585	590
Ile	Asp	Phe	Leu	Leu	Thr	Arg	Trp	Gly	Gly	595	600
Thr	Cys	Lys	Val	Leu	Gly	Pro	Asp	Cys	Cys	605	610
Ile	Gly	Ile	Glu	Asp	Leu	Ser	Lys	Asn	Ile	615	620
Ser	Glu	Gln	Ile	Asp	Lys	Ile	Arg	Lys	Asp	625	630
Glu	Gln	Lys	Glu	Glu	Thr	Gly	Trp	Gly	Leu	635	640
Gly	Gly	Lys	Trp	Trp	Thr	Ser	Asp	Trp	Gly	645	650

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